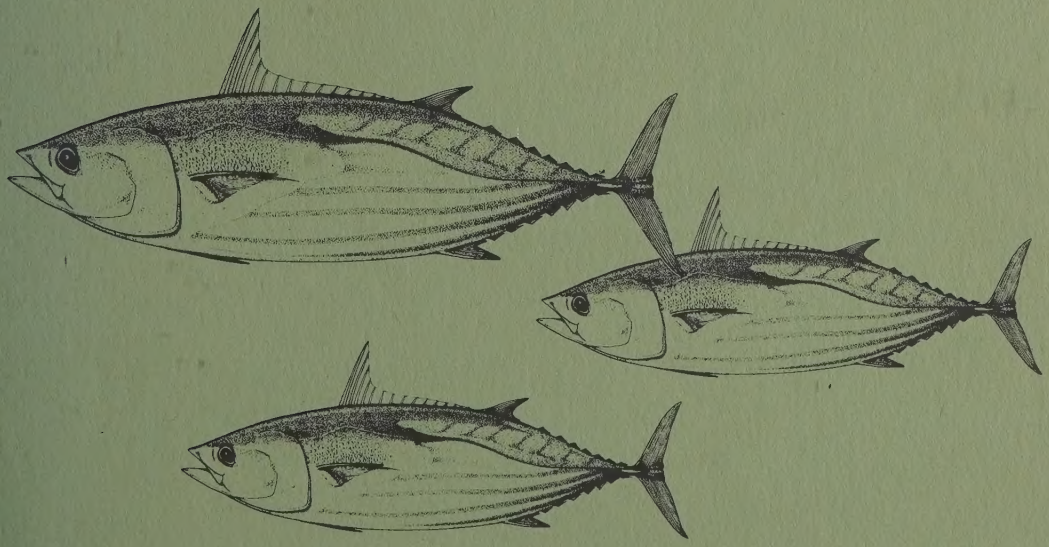
DECEMBER 1975
No. 12

FISHING INFORMATION

Southwest Fisheries Center-La Jolla, California



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U.S. DEPARTMENT OF COMMERCE
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NATIONAL MARINE FISHERIES SERVICE
SOUTHWEST FISHERIES CENTER
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FISHING INFORMATION

DECEMBER 1975 , No. 12

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PREFACE

This publication, Fishing Information, appears monthly and contains 1) fishery advisory information, 2) a narrative description of pertinent surface temperature conditions, 3) charts of winds and pressures for the eastern North Pacific, 4) charts of sea surface temperature for the North Pacific and eastern tropical Pacific, and 5) charts of subsurface temperature structure in the eastern North Pacific.

A supplement to Fishing Information appears at 15-day intervals throughout the year. This is a chart of sea surface temperature (contoured at 2°F (1°C) intervals) from Baja California to Vancouver Island out to about 135°W. Special bulletins are published in conjunction with the 15-day sea surface temperature charts which include short-term projections of albacore distribution and locations of productive fishing areas, information on oceanographic and atmospheric conditions, and other information as is appropriate during the albacore fishing season.

The Secretary of Commerce has determined that the publication of this periodical is necessary in the transaction of the public business required by law of this Department. Use of funds for printing this publication approved by the Office of Management and Budget, August 20, 1973; this approval expires June 1976.

Submitted for publication - January 22, 1976

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F. Miller (Figures 8 and 9)
J. Renner (Figures 1, 2, 3, 4, 5, 6, 7, 10, 11, 12 and 15-day Supplement)

TECHNICAL EDITOR:
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Fisheries Research Board of Canada, Pacific Environment Institute, West Vancouver, British Columbia by L.F. Giovando from observations by
L. Sabourin at Langara Island Light; G. Anderson at Cape St. James Light;
L. Collins at Kains Island Lightstation; I.G. McNeil at Amphitrite Point Light
Scripps Institution of Oceanography, La Jolla, California
Fishing Vessels, *Captain Joe Medina and Evelyn DaRosa.*

Expendable bathythermograph and salinity observations are made by the mates and engineers of the *Hawaiian Enterprise* and *Hawaiian* of Matson Navigation Co. The data are processed under supervision of D.R. McLain at the NMFS Pacific Environmental Group, Monterey, using computer facilities of the Fleet Numerical Weather Center. The project is partially supported by the National Science Foundation and the Office of Naval Research under Government NAonr-9-74.

Sea Surface Temperature and Environmental Conditions

N. CLARK AND F. MILLER

Eastern North Pacific

Seasonal cooling of the surface layer of the eastern North Pacific continued during December 1975, as temperatures dropped 1 to 5°F (0.6 to 2.8°C) from November values. However, the cooling occurred at a below-normal rate over most of this ocean area. The largest decreases in temperature were in a region bounded by 25°N and 40°N and 165°W and 180°W where temperatures dropped 3 to 5°F (1.7 to 2.8°C) from November values.

The sea surface temperature anomaly pattern for December looks similar to the one that has persisted over the preceding 11 months of 1975. The large area of 1 to 3°F (0.6 to 1.7°C) above-normal temperatures in the central North Pacific expanded during December and stretches from 20°N to 50°N and 140°W to 180°W. Below-normal temperatures occurred in the Gulf of Alaska, off the west coast of North America, and over a large area extending southwestward from Baja California to the Hawaiian Islands. The magnitude of these negative anomalies ranged from 1 to 4°F (0.6 to 2.2°C).

A deep surface low pressure trough covered most of the central and part of the eastern North Pacific during December, with negative departures up to 7 millibars. East of this trough, sea level pressures were up to 6 millibars above normal, and the resultant pressure gradients caused strong south-to-southwesterly winds north of 30°N and between 140°W and 170°W. These winds probably caused the expansion of the above-normal temperature anomaly area through increased transport of southerly warm water northward and decreased (latent and sensible) heat exchange between ocean and atmosphere.

Western North Pacific

Sea surface temperature conditions in the western North Pacific in December 1975 were quite similar to those in November except for temperature decreases due to seasonal cooling. The greatest change in the temperature anomaly pattern occurred between 15°N and 25°N and 150°E to 170°E where temperatures that were 1 to 2°F (0.6 to 1.1°C) above normal decreased to 1 to 2°F (1.1 to 2.2°C) below-normal values in December. Other changes occurred east of Honshu where below-normal temperatures increased to slightly above-normal values and east of Hokkaido and the Kuril Islands where 1 to 2°F (0.6 to 1.1°C) above-normal temperatures decreased to slightly below-normal values.

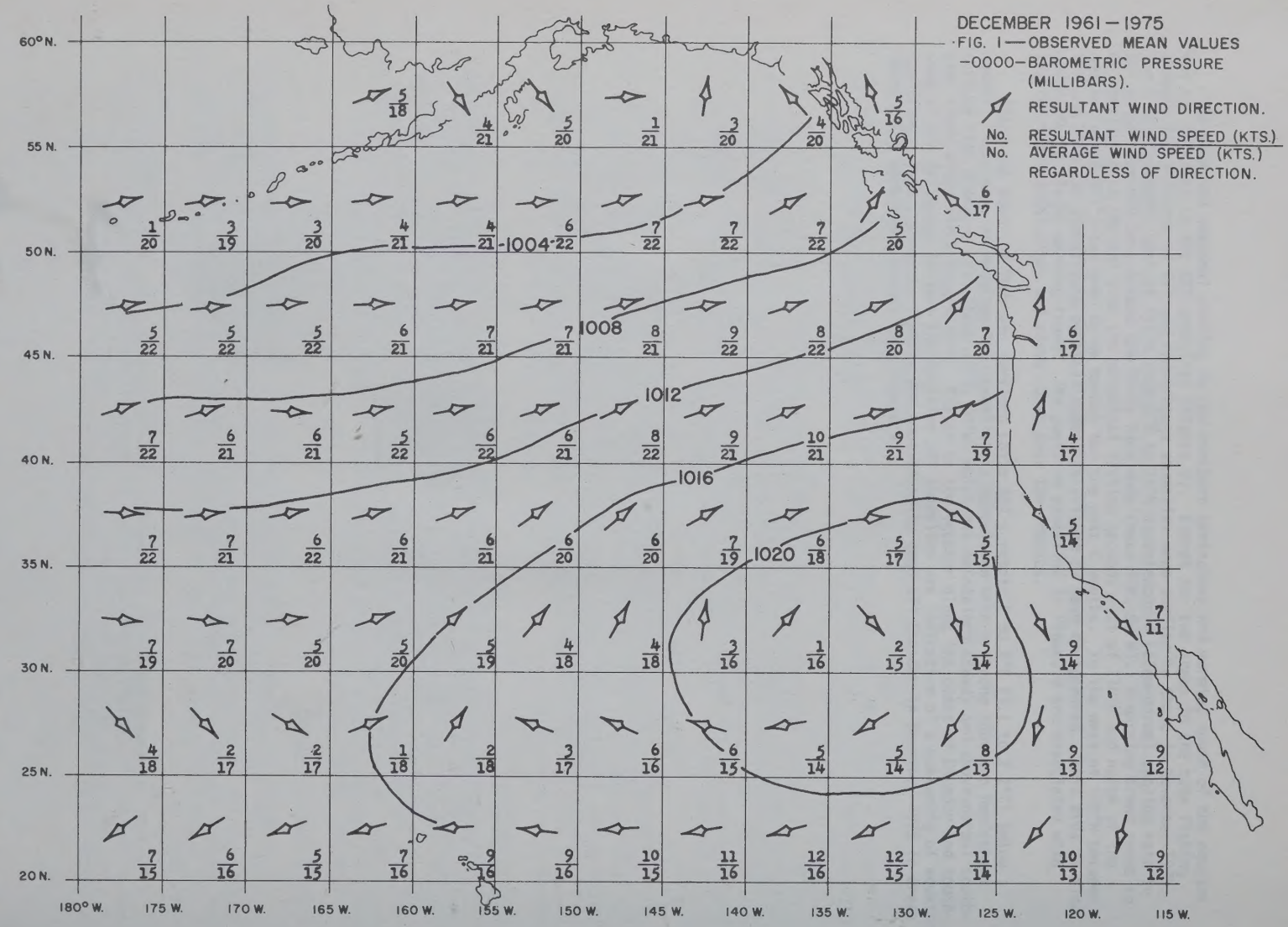
Eastern Tropical Pacific

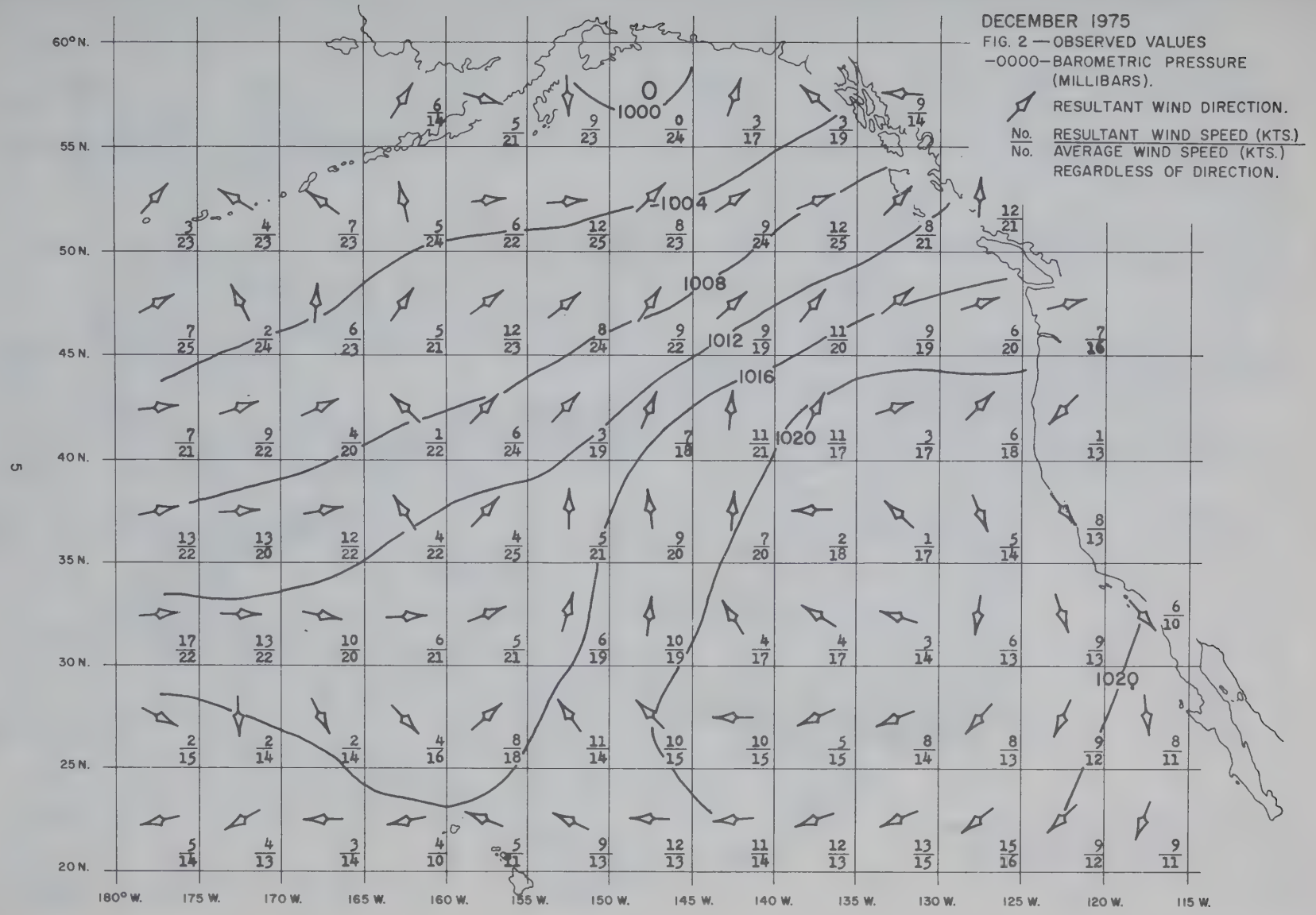
From November to December of each year the sea surface temperature (SST) normally decreases 2 to 3°F (1.1° to 1.7°C) in the fishing grounds south and west of Baja California. Over other fishing grounds of the eastern tropical North Pacific SST's decrease less than 1°F (0.6°C). In the southern hemisphere the seasonal warming normally causes an increase of 1 to 2°F (0.6 to 1.1°C) in the Peru Current. SST's in the remainder of the eastern tropical South Pacific increase less than 1°F.

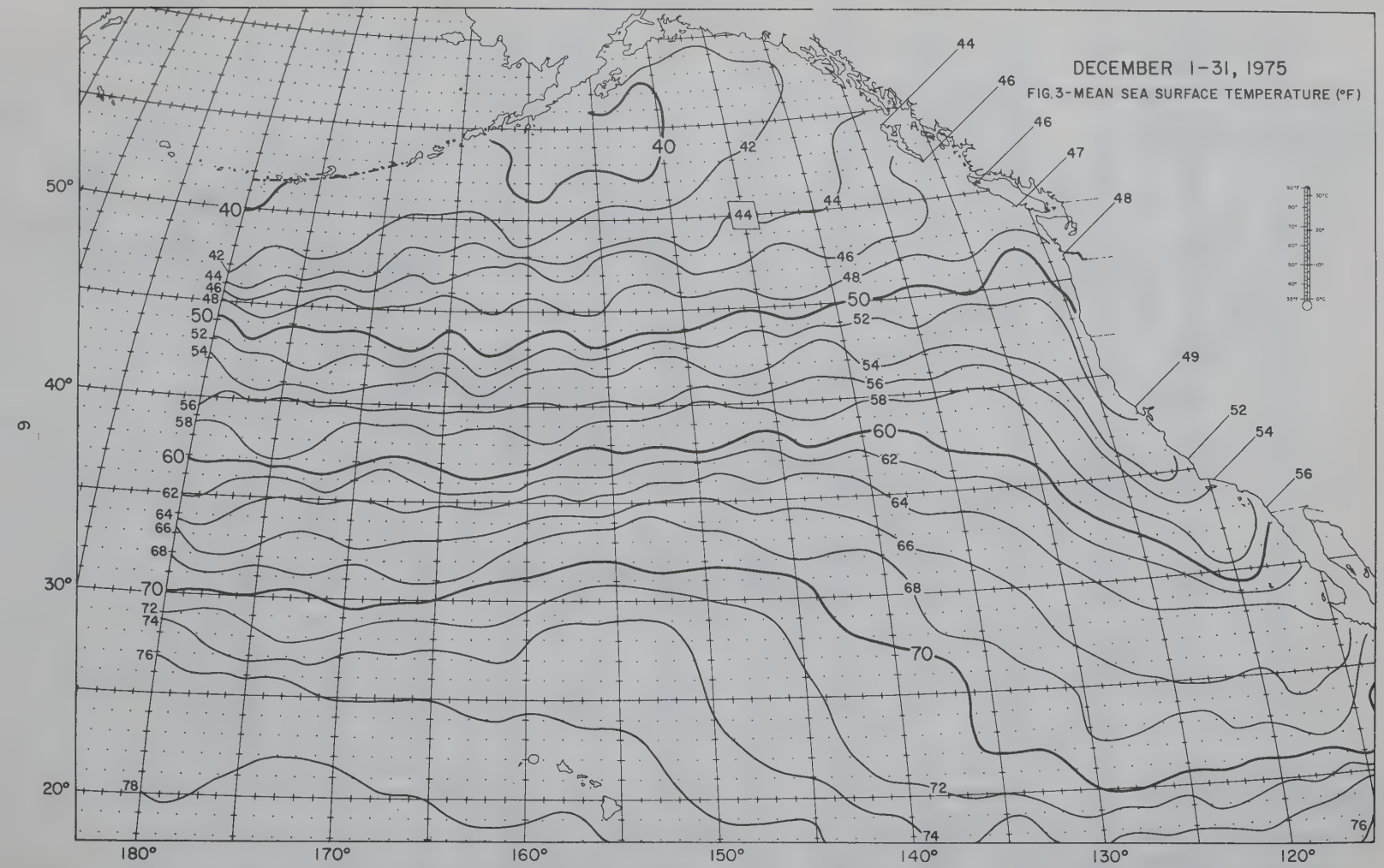
The most noticeable feature of the December 1975 SST patterns (Figure 8) is the very close resemblance to SST patterns of December 1974. The negative anomalies for December 1975 (Figure 9) along the equator west of 140°W are about 2°F (1.1°C) larger than in December 1974, but elsewhere the differences between the two December months are very small.

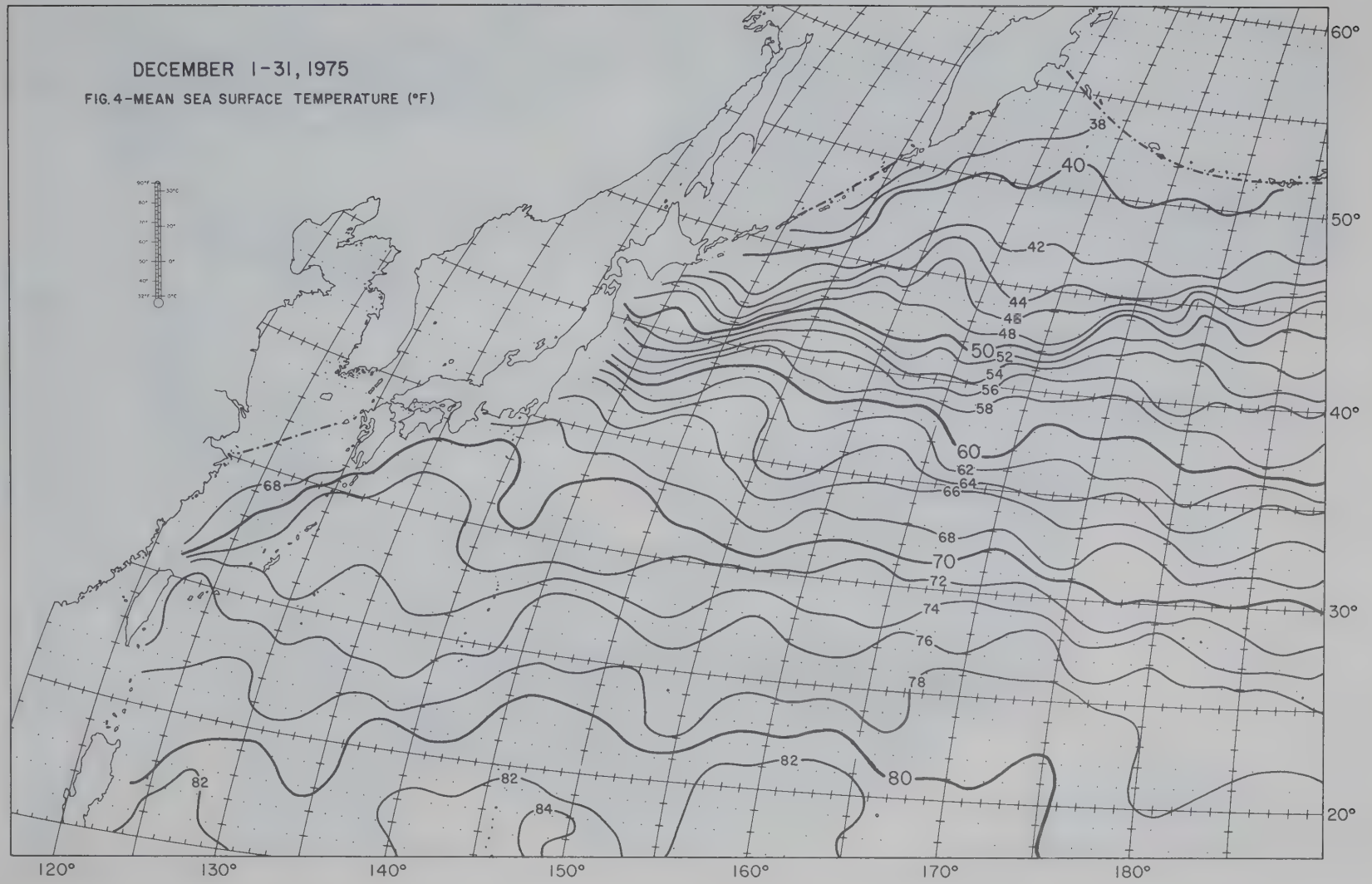
The expected seasonal cooling in the northern hemisphere and warming south of the equator was not apparent in the SST anomalies (Figure 9). Except for two areas in the tuna fishing grounds the patterns of SST and temperature anomalies were similar to those in November 1975. The fishing grounds east of 110°W from 5°N to 15°N experienced a below-normal cooling rate in SST except for the area around the Costa Rica dome (near 9°N, 90°W). A warming trend seems to be developing in the SST over the principal fishing grounds east of 110°W and north of the equator where SST's had been below normal for the past 6 months. To the west of 120°W between 5°N and 20°N the significant negative anomalies (Figure 9) have disappeared. This area is also undergoing a slight warming trend. The positive anomalies in Figure 9 are associated with lighter-than-normal winds and cloud cover over the tropics.

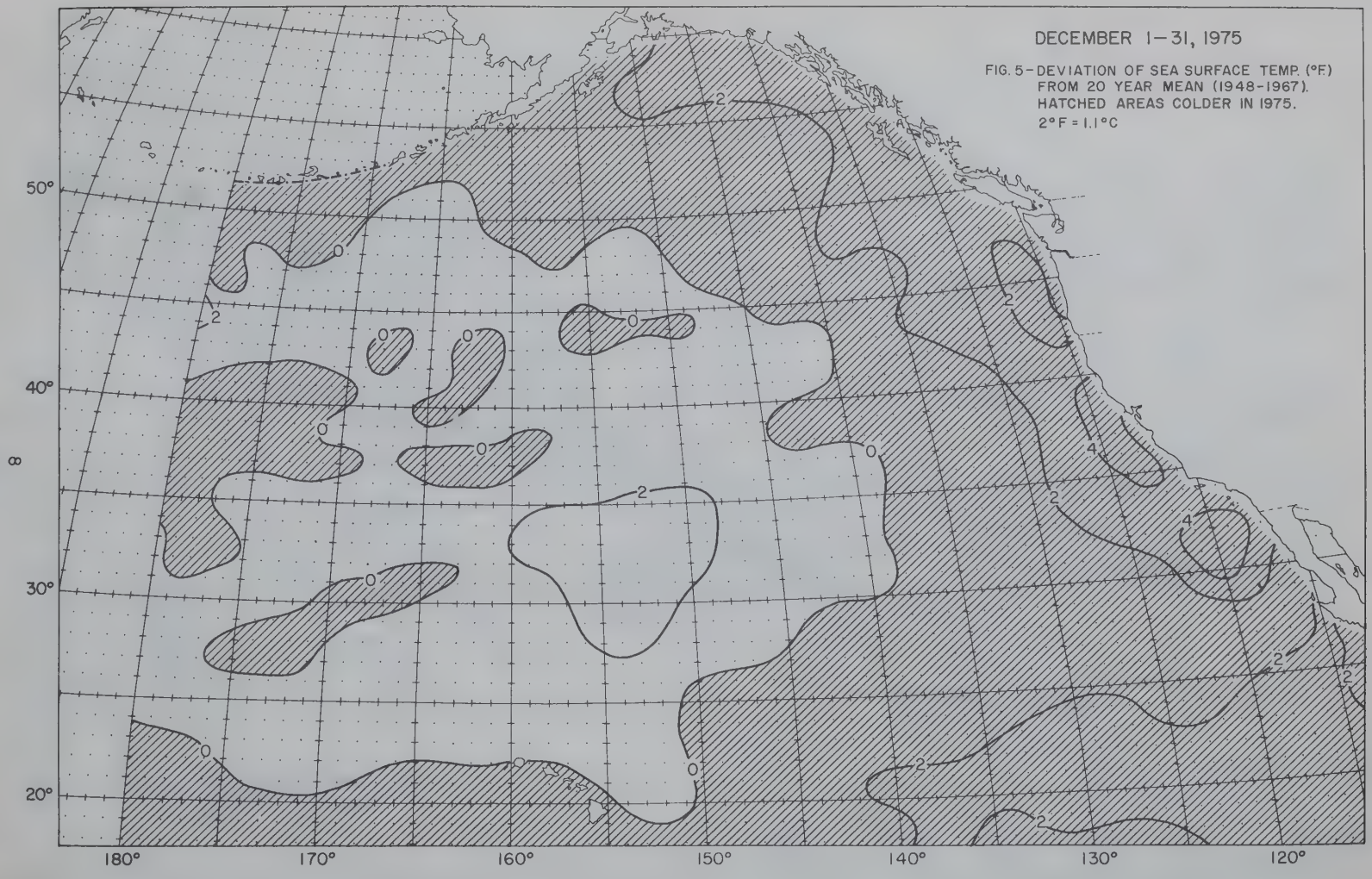
Along the coast of Peru and northern Chile SST's remain 2 to 4°F (1.1 to 2.2°C) below normal. This area of negative SST anomalies is associated with a strong southern hemisphere surface high pressure cell (near 30°S, 90°W) which has maintained steady and above-normal southeast trade winds since August 1975. Closer to the equator along the coast of Ecuador and southwest of the Galápagos Islands the positive SST anomalies are indicative of a weakening of equatorial upwelling. Tuna (skipjack) fishing was exceptionally good off Ecuador in December 1975 in areas where SST's were above normal (see Figure 9).

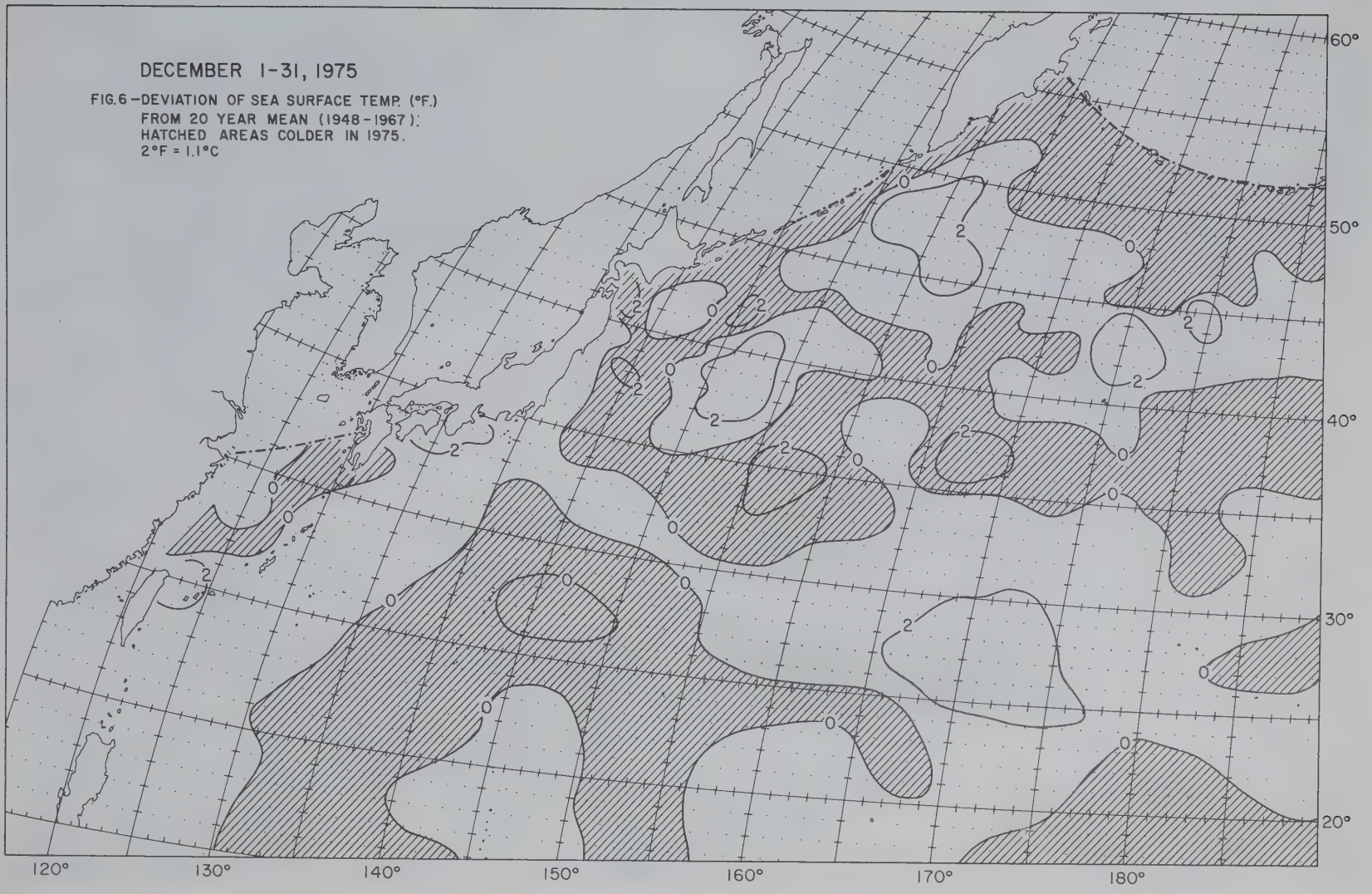

DECEMBER 1961 – 1975
FIG. 1 — OBSERVED MEAN VALUES
–0000– BAROMETRIC PRESSURE (MILLIBARS).
RESULTANT WIND DIRECTION.
No. RESULTANT WIND SPEED (KTS.)
No. AVERAGE WIND SPEED (KTS.) REGARDLESS OF DIRECTION.
1004
1008
1012
1016
1020
60° N.
55 N.
50 N.
45 N.
40 N.
35 N.
30 N.
25 N.
20 N.
180° W.
175 W.
170 W.
165 W.
160 W.
155 W.
150 W.
145 W.
140 W.
135 W.
130 W.
125 W.
120 W.
115 W.

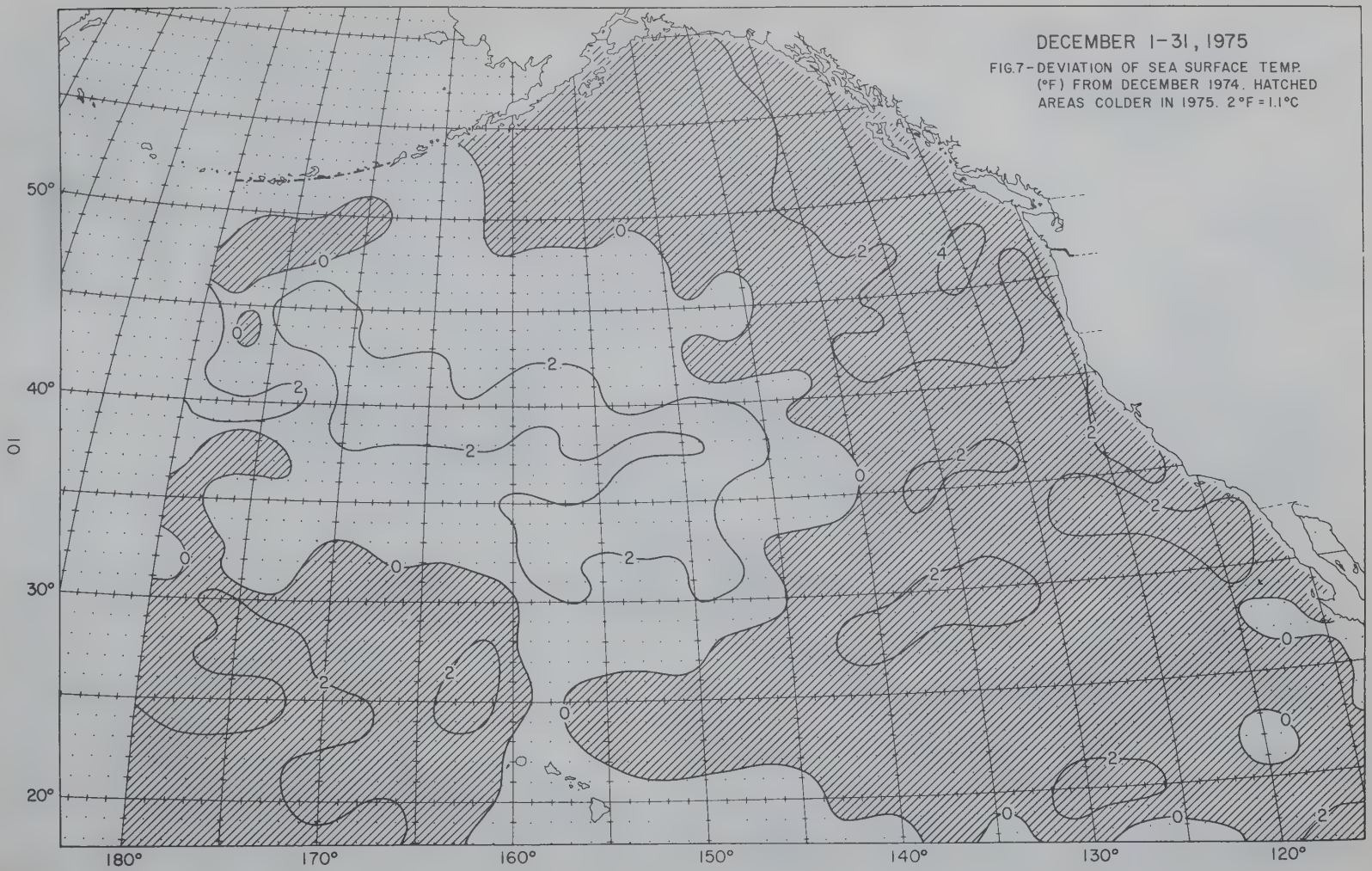

DECEMBER 1975
FIG. 2 — OBSERVED VALUES
-0000- BAROMETRIC PRESSURE (MILLIBARS).
RESULTANT WIND DIRECTION.
No. RESULTANT WIND SPEED (KTS.)
No. AVERAGE WIND SPEED (KTS.) REGARDLESS OF DIRECTION.
1000
1004
1008
1012
1016
1020
1020
60° N.
55 N.
50 N.
45 N.
40 N.
35 N.
30 N.
25 N.
20 N.
180° W.
175 W.
170 W.
165 W.
160 W.
155 W.
150 W.
145 W.
140 W.
135 W.
130 W.
125 W.
120 W.
115 W.

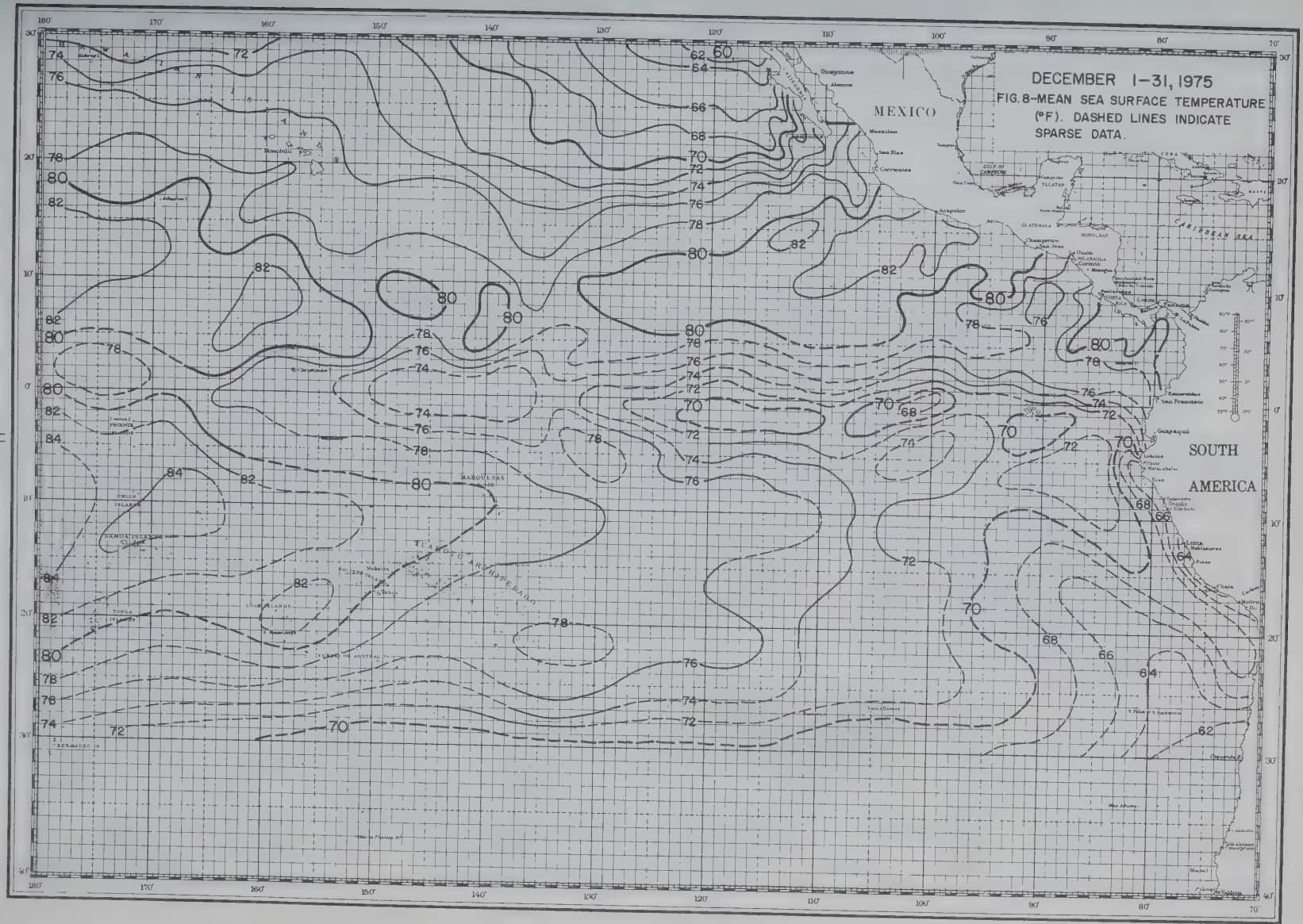

DECEMBER 1-31, 1975
FIG.3-MEAN SEA SURFACE TEMPERATURE (°F)
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°
40
42
44
46
48
50
52
54
56
58
60
62
64
66
68
70
72
74
76
78
49
47


DECEMBER 1-31, 1975
FIG. 4-MEAN SEA SURFACE TEMPERATURE (°F)
38
40
42
44
46
48
50
52
54
56
58
60
62
64
66
68
70
72
74
76
78
80
82
82
82
84
60°
50°
40°
30°
20°
120°
130°
140°
150°
160°
170°
180°


DECEMBER 1–31, 1975
FIG. 5–DEVIATION OF SEA SURFACE TEMP. (°F) FROM 20 YEAR MEAN (1948-1967). HATCHED AREAS COLDER IN 1975.
2°F = 1.1°C
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°
0
2
4


DECEMBER 1-31, 1975
FIG. 6 – DEVIATION OF SEA SURFACE TEMP. (°F.) FROM 20 YEAR MEAN (1948-1967). HATCHED AREAS COLDER IN 1975. 2°F = 1.1°C
60°
50°
40°
30°
20°
120°
130°
140°
150°
160°
170°
180°
0
2


DECEMBER 1-31, 1975
FIG.7-DEVIATION OF SEA SURFACE TEMP. (°F) FROM DECEMBER 1974. HATCHED AREAS COLDER IN 1975. 2°F = 1.1°C
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°
0
2
4


DECEMBER 1–31, 1975
FIG. 8–MEAN SEA SURFACE TEMPERATURE (°F). DASHED LINES INDICATE SPARSE DATA.
MEXICO
SOUTH AMERICA
CARIBBEAN SEA
GUATEMALA
HONDURAS
NICARAGUA
COSTA RICA
PANAMA
CUBA
HAITI
GULF OF CAMPECHE
YUCATAN
Acapulco
Guayaquil
Lima
Callao
San Francisco
Honolulu
MARQUESAS
SAMOA ISLANDS
TONGA ISLANDS
EQUATORIAL COUNTER CURRENT
EQUATORIAL COUNTER CURRENT
180°
170°
160°
150°
140°
130°
120°
110°
100°
90°
80°
70°
30°
20°
10°
0°

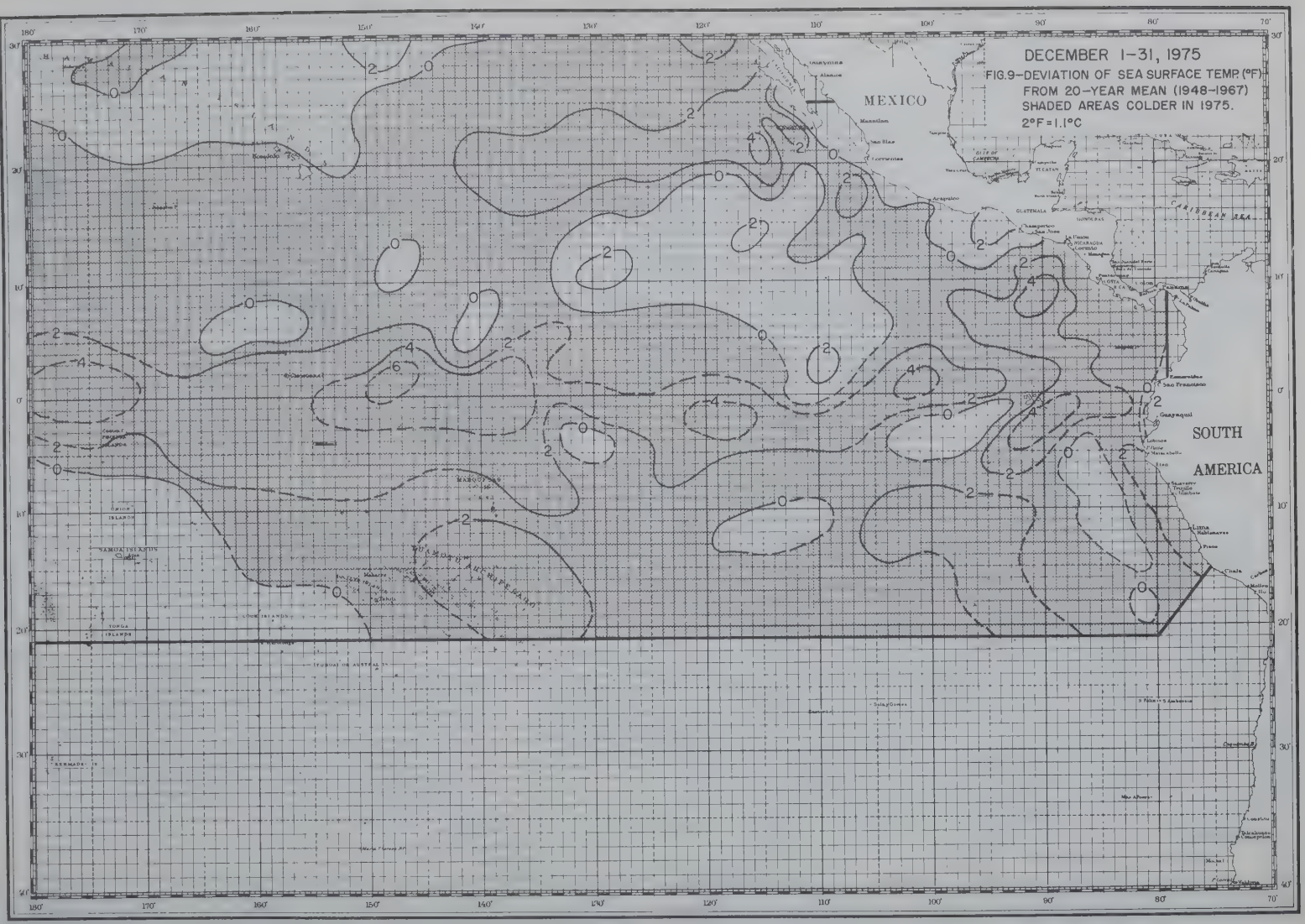
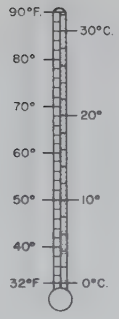

DECEMBER 1–31, 1975
FIG.9–DEVIATION OF SEA SURFACE TEMP. (°F) FROM 20–YEAR MEAN (1948–1967)
SHADED AREAS COLDER IN 1975.
2°F = 1.1°C
MEXICO
SOUTH AMERICA
CARIBBEAN SEA
GUATEMALA
NICARAGUA
COSTA RICA
Acapulco
Guayaquil
Lima
Callao
Chala
Mollendo
Arica
Iquique
Antofagasta
Coquimbo
Valparaiso
Talcahuano
Concepción
Puerto Montt
Chiloé
Juan Fernández Is.
Easter Island
Galapagos Is.
Marquesas Is.
Tuamotu Archipelago
Society Islands
Tahiti
Cook Islands
Samoa Islands
Tonga Islands
Fiji Islands
Tropic of Cancer
Equator
Tropic of Capricorn
Antarctic Circle
180°
170°
160°
150°
140°
130°
120°
110°
100°
90°
80°
70°
30°
20°
10°
0°
40°

FIGURE 10



HONOLULU — SEATTLE
(Makapuu Pt. — St. of Juan de Fuca)

NOVEMBER 28–DECEMBER 3, 1975

HAWAIIAN

VOYAGE 265

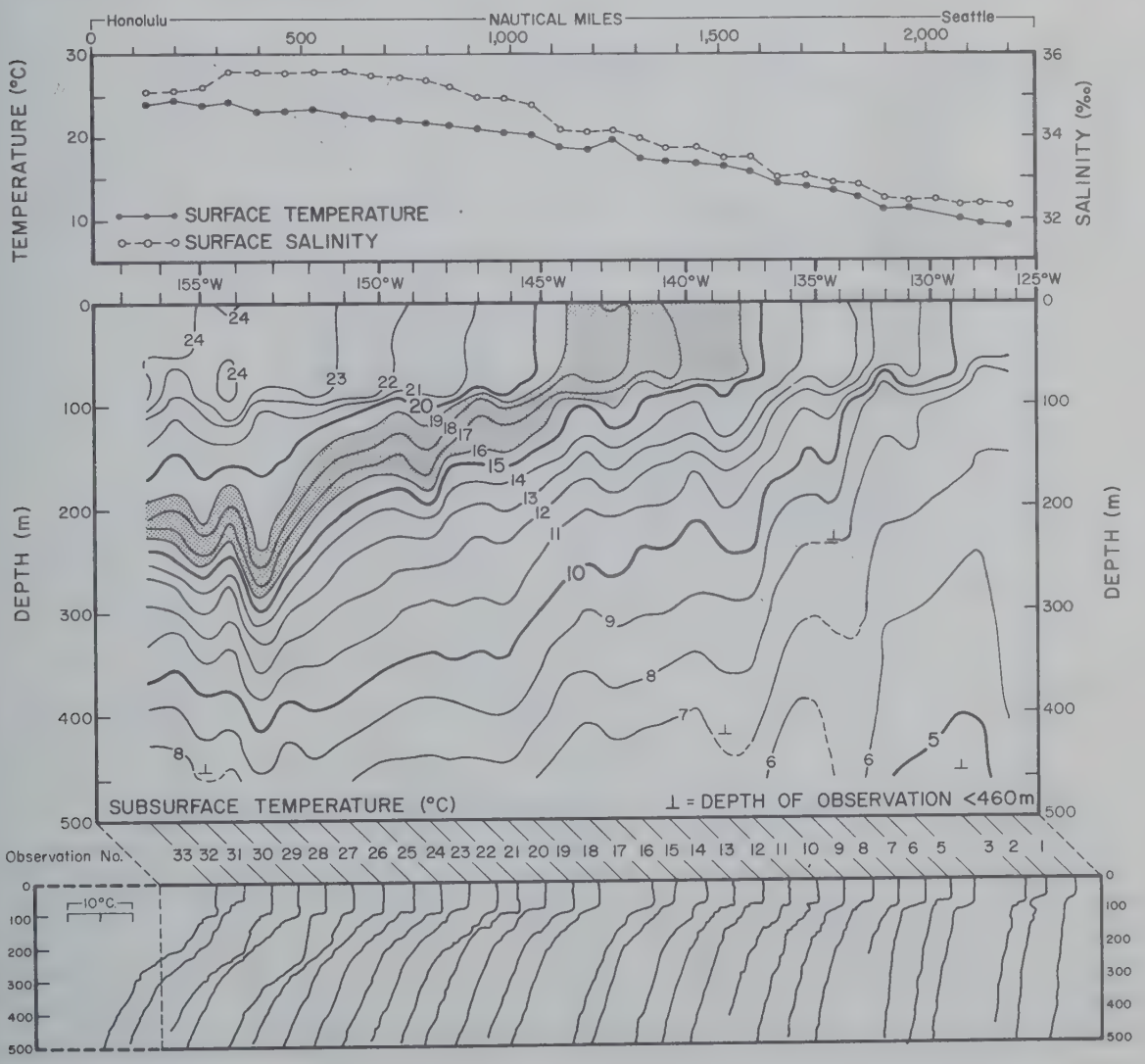
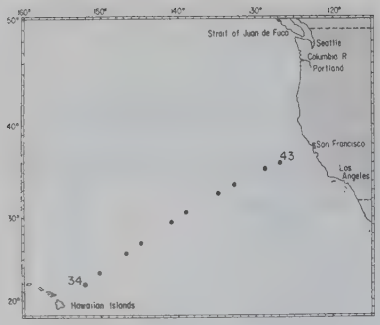
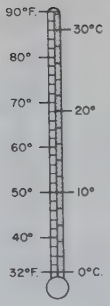


FIGURE 11





HONOLULU – SAN FRANCISCO

DEC 9-14, 1975

HAWAIIAN

VOYAGE 265

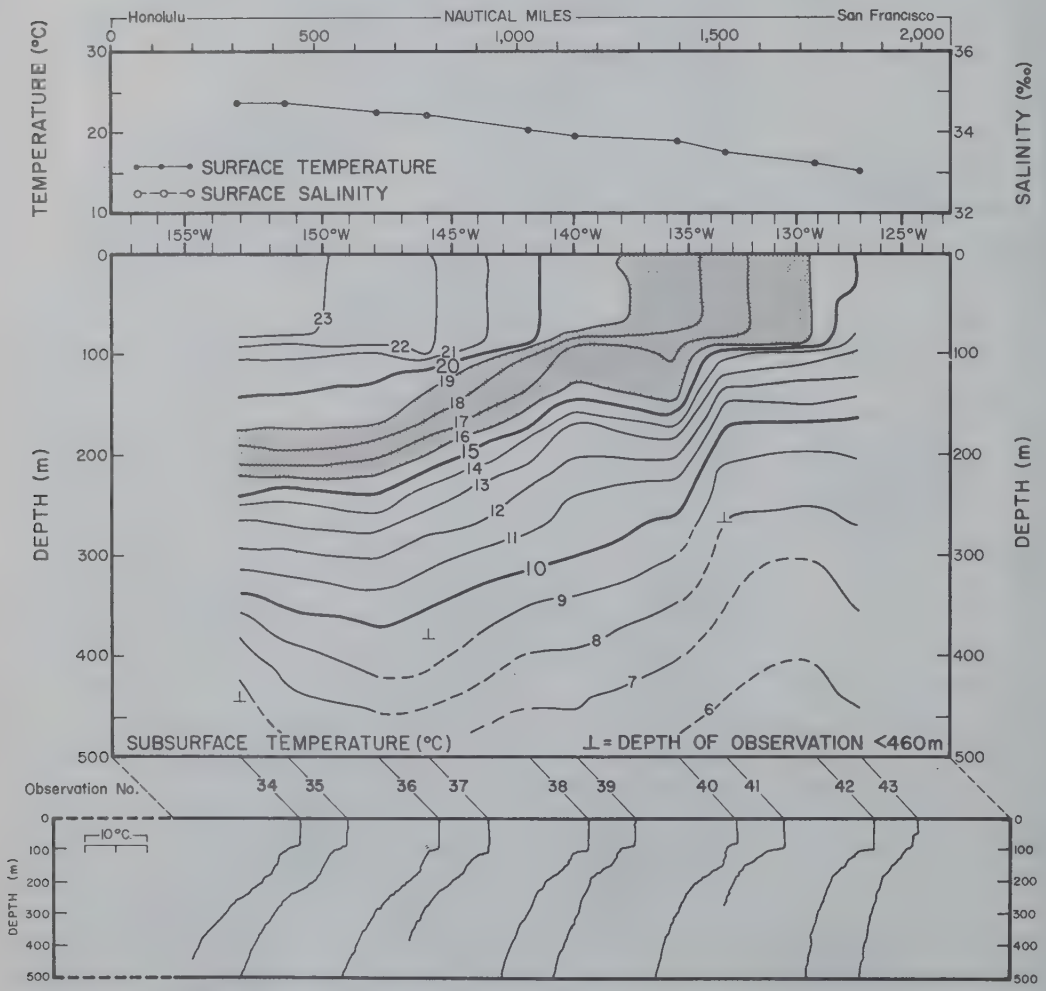
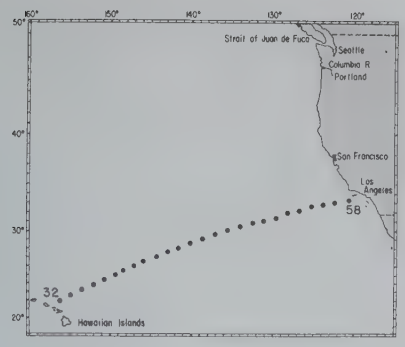
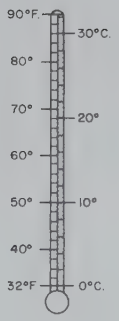


FIGURE 12



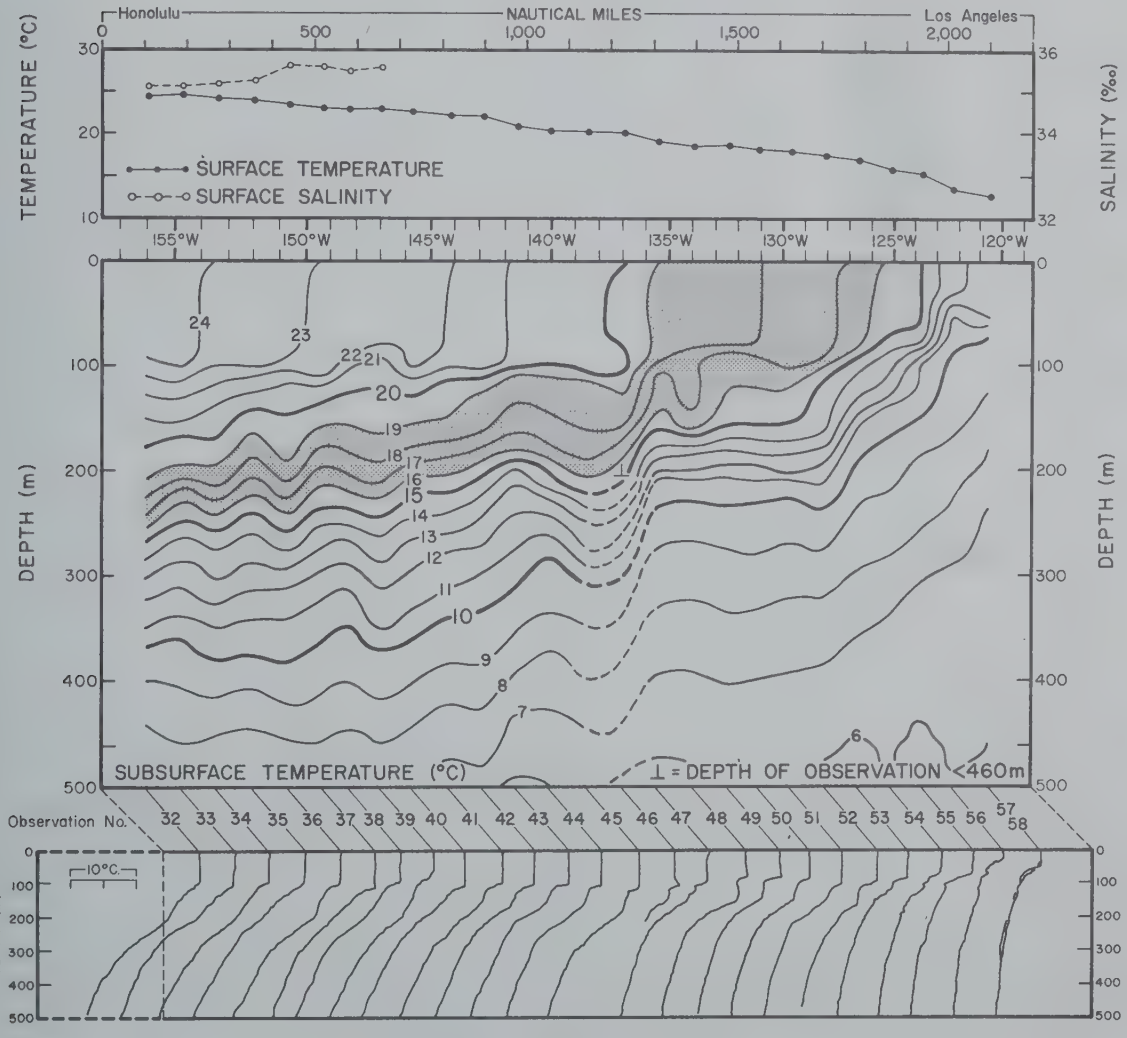


HONOLULU — LOS ANGELES

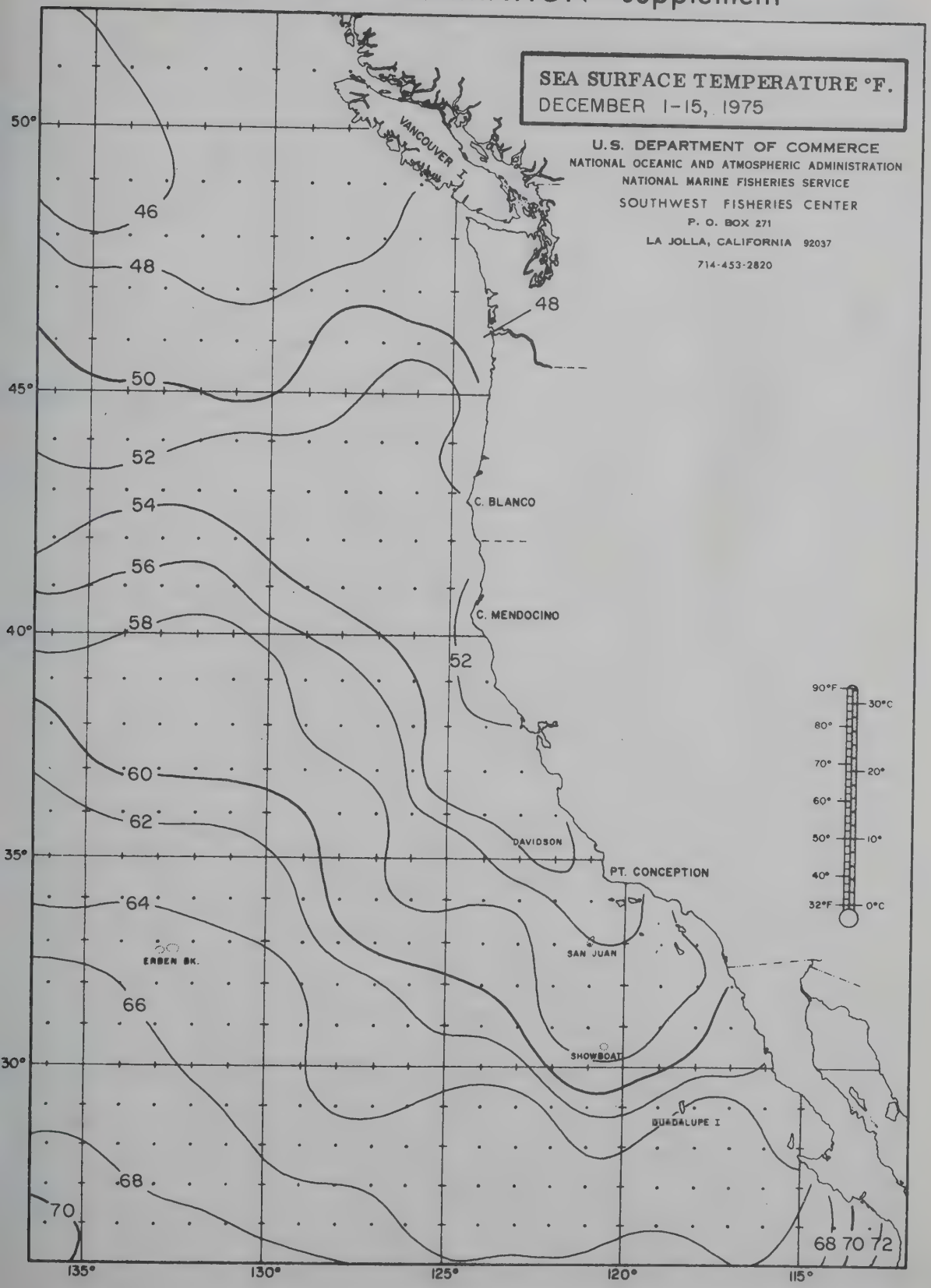
·DEC 6-10, 1975

·HAWAIIAN ENTERPRISE

VOYAGE 129



FISHING INFORMATION – supplement



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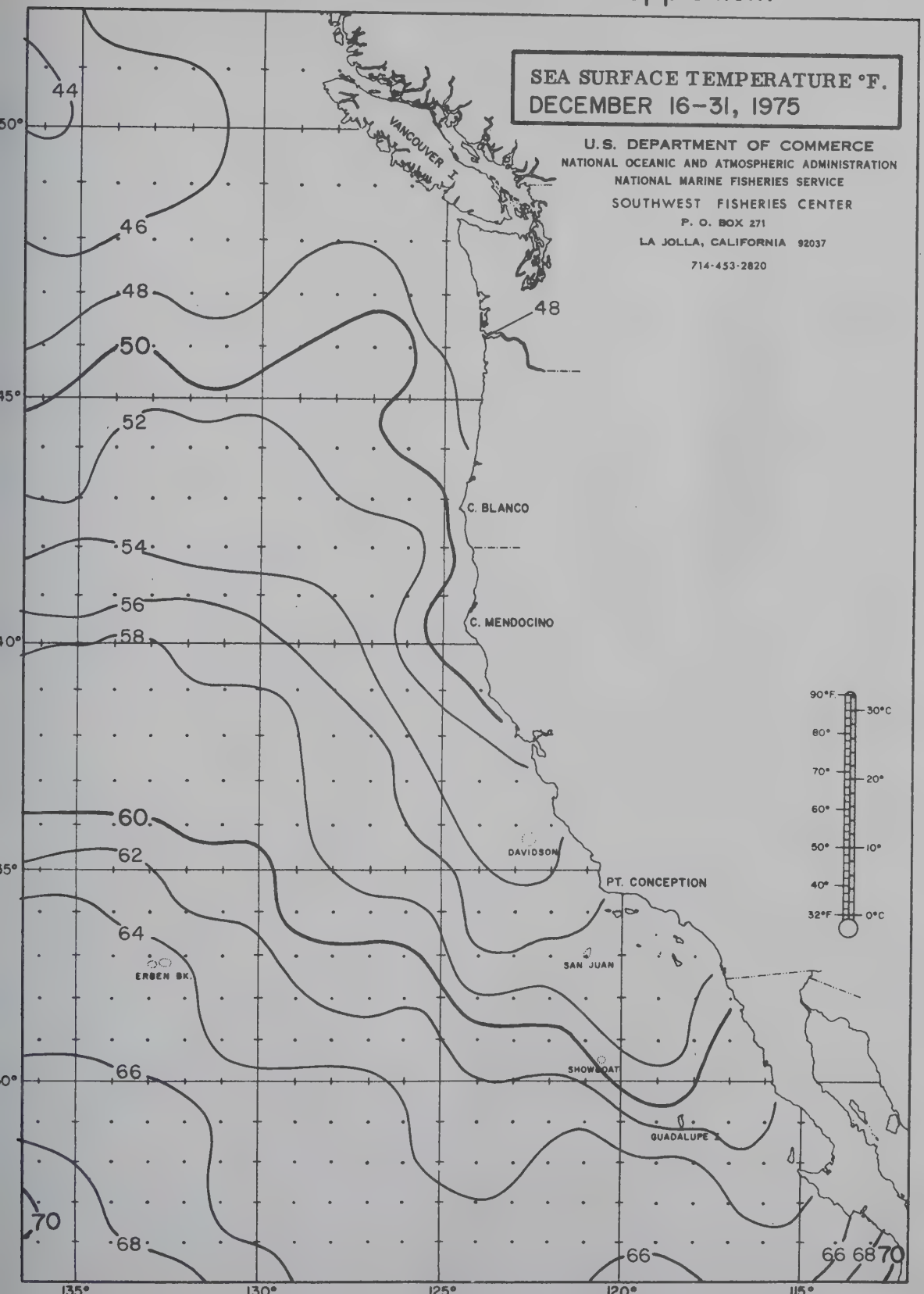

1803